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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/587,656

07/28/2006

Toshimasa Kumaki

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32294

7590

05/22/2009

SQUIRE, SANDERS & DEMPSEY L.L.P.
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14TH FLOOR
VIENNA, VA 22182-6212

EXAMINER

ROE, JESSEE RANDALL

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/587,656	Applicant(s) KUMAKI ET AL.	
	Examiner Jessee Roe	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 1,3-7,9,10,12,15 and 20-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,8,11,13,14 and 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>December 3, 2008 & January 21, 2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Claims

Claims 1-25 are pending wherein claims 2, 11, 16-17 and 19 are amended and claims 1, 3-7, 9-10, 12, 15 and 20-25 are withdrawn from consideration.

Status of Previous Objections

The previous objection to the abstract of the disclosure is withdrawn in view of the Applicant's amendment to the abstract.

Status of Previous Rejections

The previous rejection of claims 2, 8, 11, 13-14 and 16-19 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Garg et al. (US 5,777,247) is withdrawn in view of the Applicant's amendments to the claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 8 and 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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With respect to the recitation "and comprising a thickness of at least 0.5 mm" in line 5 of claim 2, it is unclear whether "a thickness" is referring to the thickness of the alloy, the thickness of the coating, or the thickness of a layer within the alloy.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 8, 11, 13-14 and 16-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kaufman (US 4,011,077).

In regards to claims 2 and 11, Kaufman ('077) discloses a method for producing an iron-based alloy wherein an alloyed additive powder having selected alloying ingredients (such as manganese, nickel, molybdenum) blended with the iron-base (iron-carbon-alloy) powder and the additive alloy powder is coated with copper (applied to a surface of the iron-based alloy) and sintered at a temperature in the range of 2060°F to

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2080°F (1127°C to 1138°C) (abstract, col. 5, lines 10-25, col. 7, lines 12-31). Kaufman ('077) further discloses that the outer peripheral region of each iron base powder particle will become enriched with carbon and alloying ingredients.

Since Kaufman ('077) discloses the same or substantially the same method steps of treating the same or substantially the same composition, the structure “wherein said coating contains a thickness of at least 0.5 mm and a carbide formed by carbonizing a first element that has a property for increasing hardness of an Fe-based alloy, wherein a second element other than said first element, is contained in said Fe-based alloy, said second element having an amount which is larger in said surface layer portion as compared with said inside portion, and wherein an amount of said first element increases from said surface layer portion in said inside portion” would be expected. MPEP 2112.01 I.

Alternatively, it would have been obvious to one having ordinary skill in the art to modify the size/quantity of the particles of alloy additive powder having ingredients (such as manganese, nickel, and molybdenum) such that thickness of 0.5 mm would be met since the ratio of base alloy powder to additive alloy powder is result-effective in terms of compressibility and cost (economy) (col. 6, lines 45-63). MPEP 2144.05 II.

In regards to claims 8 and 14, Kaufman ('077) discloses copper (abstract).

In regards to claims 13 and 16-19, Kaufman ('077) discloses chromium, manganese, and nickel (abstract). A carbide of chromium, manganese, and nickel of the form M_6C or $M_{23}C_6$ ((Fe,M)₆C or (Fe,M)₂₃C₆) would be expected since Kaufman

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('077) discloses the same or substantially the same composition in addition to the same or substantially the same process.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 8 and 16-19 are rejected under 35 U.S.C. 103(a) being unpatentable over Tahara et al. (US 5,792,282) alone, or alternatively in view of the ASM Handbook Volume 4.

In regards to claim 2, Tahara et al. ('282) discloses carburizing an austenitic stainless steel, which inherently has an iron-base, comprising 1 to 6 weight percent molybdenum and 13 to 25 weight percent chromium (abstract and col. 2, lines 57-67). Tahara et al. ('282) discloses that carbon diffuses and penetrates the surface to form a deep uniform layer (col. 6, lines 23-29) wherein chromium carbide can hardly be identified and more of the chromium is present in the steel than in the case (col. 8, lines 1-22). The Examiner notes that the structure disclosed by Tahara et al. ('282) is the same as that of the instant invention. Therefore, an increase in hardness from the surface to an inside portion thereof is expected. MPEP 2112.01 I.

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With respect to the recitation "and comprising a thickness of at least 0.5 mm" in line 5 of claim 2, merely changing the proportion (thickness) of a prior art product would not be sufficient to distinguish from the prior art. MPEP 2144.04 IV(A).

Alternatively, Tahara et al. ('282) does not specify the thickness of the carburized layer.

The ASM Handbook Volume 4 discloses that by modifying time and/or temperature, a carburized layer thickness of greater than 1 mm can be achieved (pg. 314, col. 2 – pg. 315, col. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified time and temperature, as disclosed by the ASM Handbook Volume 4, while carburizing as disclosed by Tahara et al. ('282), in order to achieve any desired carburized layer thickness. MPEP 2144.05 II.

In regards to claim 8, Tahara et al. ('282) discloses that the presence of carbon is higher in the surface portion than that of the inside portion (col. 3, lines 30-44 and col. 6, lines 23-29).

In regards to claims 16-19, Tahara et al. ('282) discloses the formation of Cr_{23}C_6 (col. 8, lines 1-23) and the addition of molybdenum for the stabilization of ferrite (iron in solid solution) (col. 3, lines 44-52). Therefore, the presence of $(\text{Fe}, \text{Cr})_{23}\text{C}_6$ is expected.

Response to Arguments

Applicant's arguments with respect to claims 2, 8, 11, 13-14 and 16-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571)272-5938. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:00 AM - 4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
Unit 1793

JR